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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,244	01/19/2006	Katsuichi Chiba	46449	9167

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EXAMINER	
NGUYEN, KHANH TUAN	
ART UNIT	**PAPER NUMBER**
1796	

MAIL DATE	DELIVERY MODE
10/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/565,244	CHIBA ET AL.	
	Examiner	Art Unit	
	Khanh T. Nguyen	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 08/16/2007 is entered and acknowledged by the Examiner. Claims 1-3 and 5 are currently pending in the instant application. Claim has been cancelled.

The terminal disclaimer filed on 08/16/2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/565,297 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Withdrawn Rejection

2. The rejection of claims 1-4 under nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 3-5 of copending Application No. 10/565,297 is withdrawn in light of Applicant's filing of a proper Terminal Disclaimer.

The rejection of claims 1-5 under 35 U.S.C 102(b) or alternatively 103(a) over Vogt is withdrawn in light of Applicant's amendment and remarks.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 8/16/2006 and has been regarded by Examiner and made of record in the application file.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites an impurity range in the electroconductive powder is 0.1 or less as obtained by formula (1) and an impurity range in the titanium dioxide is 0.02 or less as obtained by formula (2). The Examiner is unclear as to what the units these impurity ranges are referring to. Applicant is suggested to include a unit(s) with the claimed impurity ranges (e.g. weight %, mol %, or g/mol etc).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Applicant's definition of "substantially no antimony" is noted on page 13 of the specification.

6. Claims 1-3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshizumi (U.S Pat. 4,452,830 hereinafter, "Yoshizumi") in view of Sakamoto et al. (U.S Pat. 4,880,703 hereinafter, "Sakamoto").

With respect to instant claims 1-3, Yoshizumi teaches electroconductive particle coated with a layer of antimony-containing tin oxide applied to the surface of the titanium dioxide particles (Col. 2, lines 10-16). Yoshizumi also teaches the purity of the titanium dioxide particles should be 99 % or higher are preferred because of at this purity the rutile-type crystalline structure is retained (Col. 3, lines 39-52). Yoshizumi further teaches the increase in antimony (metallic element) content will decrease the degree of whiteness of said particles (Col. 2, lines 22-24). Thus, Yoshizumi teaches the powder resistivity of the electroconductive powder can be adjusted within a range of 1ohm cm to 1 mega ohm cm by controlling the coating thickness or/and the antimony (Sb) content within the coating layer (Col. 6, lines 50-54).

Yoshizumi fails to teach a phosphorus-containing electroconductive layer.

In the same field of endeavor, Sakamoto teaches an electroconductive powder having a titanium dioxide surface of at least 98% purity (Col. 2, lines 40-41). The said titanium dioxide surface is coated with an electroconductive layer comprising of 1-50 weight % of tin oxide (Col. 4, line 38), antimony oxide and at most 3 weight % impurities (Col. 2, lines 10-18). Sakamoto also teaches the said electroconductive layer also contains at most 1% phosphorous as an impurity (Col. 2, line 41-43). Sakamoto further teaches the content of metal elements (compounds) having valence of 3 or less such as Na, K, Zn, Al or the like in the powder is at most 0.2 weight %, desirably 0.1 weight % in

terms of oxide (Col. 2, lines 44-47). Sakamoto teaches the improvement of titanium dioxide purity to at least 97 %, more preferably at least 98%, by reducing the said metallic elements with an acid or an alkali (Col. 3, line 64 to Col. 4, line 1). Sakamoto disclosure of metallic element impurities having valence or 3 or less is at most 0.2 weight % in the powder is considered to meet the limitation of Formula (1).

Yoshizumi and Sakamoto references are combined because both references teach a highly pure electroconductive titanium dioxide powder coated with antimony-containing tin oxide. Therefore, it would have been obvious to a skilled artisan to modify Yoshizumi highly pure titanium dioxide powder (99 % or more purity) coated with a layer of antimony-containing tin oxide to comprise of a phosphorus as an impurity as taught by Sakamoto and adjust the content of antimony to arrive at the claimed invention. The claim language of "substantially no antimony" recited in claim 1, does not completely exclude the present of antimony. Moreover, Yoshizumi and Sakamoto disclosure of a titanium dioxide having at purity of 98 % or higher is considered to read on the claimed limitation of titanium dioxide having an metallic element impurity of 0.02 or less obtained by Formula (2).

Regarding claim 5, Sakamoto further teaches a method for producing an electroconductive powder which comprises adding an aqueous acidic solution in which a tin compound and a phosphorus compound are dissolved and an aqueous alkaline solution to an aqueous suspension of titanium dioxide (Col. 2, lines 10-27) in which the content of a metallic element having a valence of 4 or less contained in the titanium

dioxide as an impurity is 0.02 or less as (B) obtained by the above formula (2) (Col. 2, lines 37-47) with maintaining pH of the aqueous suspension in the range of 2-6 or 8-12 (Col 4, line 30-36), then fractionating (separating) the resulting product (Col. 4, lines 59-61), and firing the product at a temperature of 600-925°C (Col. 4, lines 62-63) to form an electroconductive layer containing tin oxide and phosphorus on the surface of the titanium dioxide (Example 1).

7. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vogt (U.S Pat. 6,632,276 hereinafter "Vogt") in view of Sakamoto et al. (U.S Pat. 4,880,703 hereinafter, "Sakamoto").

With respect to instant claims 1-3 and 5, Vogt teaches a conductive pigment is form by coating a substrate with a conductive layer, the conductive layer being a tin oxide layer doped with phosphorus (Col. 1,lines 54-57). The substrate can be spherical particles such as titanium dioxide TiO_2 (Col. 2, lines 22-23). The substrate contains about 25 to 100 weight percent of the conductive layer of tin oxide doped with phosphorus (Col. 2, lines 65-67). The content of phosphorus in the conductive layer, based on the tin, is 0.1-20 atom percent (Col. 3, lines 5-8). Vogt also discloses the content of the metallic element (e.g. Sn) having a valence of 2 and 4 (Col. 2, lines 52-54).

Furthermore, Vogt teaches a process for forming the conductive pigment by preparing an aqueous substrate suspension and a hydrolysable tin salt solution and a n aqueous phosphorus compound are added, the pH of the suspension of the substrate

suspension being kept in a range which effects hydolysis of the tin salt by simultaneous additional of a base or an acid, and the substrate coated in this manner is separated off, washed, dried and calcined at temperature of 400-1100 degrees Celsius with exclusion of oxygen (Col. 1, lines 58-67). The optimum concentration and pH values can be determined by routine experiments. The optimum pH for precipitation is usually retain throughout the entire precipitation process in order to achieve uniform pigments (Col. 3, lines 21-25).

Vogt fails to teach a high purity titanium oxide particle surface.

In the same field of endeavor, Sakamoto teaches an electroconductive powder having a titanium dioxide surface of at least 98% purity (Col. 2, lines 40-41). The said titanium dioxide surface is coated with an electroconductive layer comprising of 1-50 weight % of tin oxide (Col. 4, line 38), antimony oxide and at most 3 weight % impurities (Col. 2, lines 10-18). Sakamoto also teaches the said electroconductive layer also contains at most 1% phosphorous as an impurity (Col. 2, line 41-43). Sakamoto further teaches the content of metal elements (compounds) having valence of 3 or less such as Na, K, Zn, Al or the like in the powder is at most 0.2 weight %, desirably 0.1 weight % in terms of oxide (Col. 2, lines 44-47). Sakamoto teaches the improvement of titanium dioxide purity to at least 97 %, more preferably at least 98%, by reducing the said metallic elements with an acid or an alkali (Col. 3, line 64 to Col. 4, line 1). Sakamoto disclosure of metallic element impurities having valence 3 or less is at most 0.2 weight % in the powder is considered to meet the limitation of Formula (1). Sakamoto disclosure of a titanium dioxide having at purity of 98 % or higher is considered to read

on the claimed limitation of titanium dioxide having an metallic element impurity of 0.02 or less obtained by Formula (2).

Vogt and Sakamoto references are combined because both references teach an electroconductive titanium dioxide powder coated with phosphorus-containing tin oxide. Therefore, it would have been obvious to a skilled artisan to modify Vogt electroconductive powder by incorporating a highly pure titanium dioxide powder core (purity of 98 % or more) with metallic element impurities having valence 3 or less is at most 0.2 weight % as taught by Sakamoto in order to increase the particle purity (Col. 3, line 64 to Col. 4, line 1).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh T. Nguyen whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KTN
10/18/2007

LORNA M. DOUYON
PRIMARY EXAMINER